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MARSHALL STAR

In This Week's Star (Click to Expand)

NASA's J-2X Upper Stage Rocket Engine Ready for Testing

By Jennifer Stanfield

The J-2X engine, the new rocket engine that could power the upper stage of NASA's future heavy lift launch vehicle, is fully assembled and ready for testing. The J-2X, designed and built by Pratt & Whitney Rocketdyne of Canoga Park, Calif., for NASA's Marshall Space Flight Center, is installed in the A-2 Test Stand at NASA's Stennis Space Center. It is scheduled to undergo a series of 10 test firings beginning in mid-June and lasting several months. Collected data will verify the engine functions as designed.

Image right: The J-2X rocket engine sits ready for testing in the assembly area. The J-2X is a versatile rocket engine designed to loft a launch vehicle's upper stage beyond low-Earth orbit. The J-2X builds on heritage designs but relies on nearly a half-century of NASA spaceflight experience and technological advances. (NASA)

"An upper stage engine is essential to making space exploration outside low-Earth orbit a reality," said Mike Kynard, manager of the J-2X upper stage engine project at Marshall. "The J-2X goes beyond the limits of its historic predecessor and achieves higher thrust, performance and reliability than the J2. We are thrilled to have the engine in the test stand to validate our assumptions about engine performance and reliability."

The test stand transition work from the space shuttle main engine project to the J-2X test project included structural, electrical and plumbing modifications to accommodate the different geometry of the J-2X engine, and included the installation of a new J-2X engine start system. Also replaced on the stand were liquid oxygen and liquid hydrogen transfer lines and piping that dated back to the 1960s. Control systems also were upgraded on the stand.

Fueled by liquid hydrogen and liquid oxygen, the J-2X engine will generate 294,000 pounds of thrust in its primary operating mode to propel a spacecraft into low-Earth orbit. By changing the mixture ratio of liquid oxygen to liquid hydrogen, the J-2X can operate in a secondary mode of 242,000 pounds of thrust required to power a spacecraft from low-Earth orbit to the moon, an asteroid, or other celestial destinations. The J-2X can start and restart in space to support a variety of mission requirements.

"We are excited to have a new engine in the A-2 Test Stand," said Gary Benton, manager of the J-2X engine testing project at Stennis. "Installation of the J-2X engine marks the beginning of the third major rocket engine test project on this historic stand. The A-2 Test Stand originally was used to test Saturn V rocket stages for NASA's Apollo Program. In the mid-1970s, the stand was modified from Apollo Program parameters to allow testing of space shuttle main engines. The test stand was once again modified to prepare for J-2X engine testing."

For photos and a time-lapse video of the engine, or to learn more about J-2X testing, visit:

http://www.nasa.gov/mission_pages/j2x/.

Stanfield is a public affairs officer in the Office of Strategic Analysis and Communications.

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Marshall's 'Take Our Children to Work Day' Offers Children Hands-On Fun and Educational Projects

Children participating in the Marshall Space Flight Center's "Take Our Children to Work Day" watch science in action as Jon "Boise" Pearson conducts a science experiment in the Propulsion Systems Department at Building 4205. On June 9, more than 700 children enjoyed a science and technology-filled day touring Marshall facilities, building robots, flyers and lunar landers and training like astronauts. The annual event is organized by the Marshall Center's Office of Diversity and Equal Opportunity. (NASA/Emmett Given)

Can you land on the moon? Participants built balloon-powered lunar landers, created a lunar lander network and practiced "landing" on the moon. Among the dozens of activities organized for "Take Our Children to Work Day" by the Marshall Center were presentations and demonstrations by Sci-Quest, the U.S. Space & Rocket Center, the Redstone Arsenal Fire Department, Dynetics and Redstone Federal Credit Union. (NASA/Emmett Given)

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STS-135 Mission Targeted to Launch July 8

Shuttle Atlantis to Deliver Supplies, Spare Parts to Space Station

NASA is targeting July 8 for the launch of space shuttle Atlantis on a 12-day mission. Aboard will be the Raffaello multipurpose logistics module, filled with supplies, equipment and spare parts for the International Space Station. The module, managed by the Marshall Space Flight Center, is approximately 21 feet long, 15 feet in diameter, weighs 4.5 tons and can deliver up to 10 tons of cargo to the space station. The mission also will fly a system to investigate the potential

for robotically refueling existing spacecraft and return a failed ammonia pump module to help NASA better understand the failure mechanism and improve pump designs for future systems. Launch is scheduled for 10:26 a.m. CDT.

Image right: Commander Chris Ferguson, center right; Pilot Doug Hurley, center left; and Mission Specialists Rex Walheim and Sandy Magnus will fly space shuttle Atlantis on the final scheduled space shuttle mission, STS-135. (NASA)

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Utah State Wins Student Launch Rocketry Challenge

By Angela Storey

NASA has named student rocketeers from Utah State University in Logan the champions in the 10th annual NASA Student Launch Projects rocketry challenge, which seeks to inspire young people to pursue rewarding careers in science, technology, engineering and mathematics.

Image left: The "NINA" rocket, designed and built by students at Dean Ray Stucky Middle School in Wichita, Kan., thunders off the launch pad at Bragg Farms in Toney, Ala., home to the NASA Student Launch Projects "launchfest" since 2008. (NASA/David Higginbotham)

The win for Utah State University is its third in the past four years. Competitors from the Massachusetts Institute of Technology in

Cambridge and Vanderbilt University in Nashville, Tenn., won second and third place, respectively. The "Rookie of the Year" award also went to competition newcomer Massachusetts Institute of Technology.

A record 27 student teams from colleges and universities across the nation participated in this year's challenge. Each year, student teams vie to see whose rocket can come closest to the 1-mile altitude goal and safely return its onboard science or engineering payload -- which they also must design and build as part of the challenge. The student teams also maintain project websites and create local educational campaigns to excite younger students about technical fields of learning -- potentially cultivating still more future scientists, engineers and national leaders.

The Marshall Space Flight Center organizes the rocketry competition each year at Bragg Farms in Toney, Ala., which has hosted the launch challenge since 2008. It is sponsored by ATK Aerospace Systems of Salt Lake City, Utah.

Image right: Student rocketeers from Tuskegee University in Tuskegee, Ala., were among more than 300 middle school, high school, college and university students who took part in an April 16 rocket fair -- the kickoff event for the 2009-10 NASA Student Launch Projects rocketry challenge, organized by the Marshall Space Flight Center. (NASA/David Higginbotham)

During the April launch event that concluded the 2010-11 competition, NASA and ATK presented a variety of preliminary awards. In addition to its top trophies, Vanderbilt won "Best Payload Design" -- for its novel, liquid-nitrogen injection system, simulating the working behavior of an airplane engine at cruising altitude -- and Massachusetts Institute of Technology earned the "Project Review" award for the best written reports, flight readiness reviews and formal presentations.

Top-prize winner Utah State also was honored for "Best Vehicle Design," an award the school last received in 2009, the last year it also won the entire competition.

For a complete list of 2010-11 NASA Student Launch Projects preliminary winners, visit:

http://www.nasa.gov/centers/marshall/news/news/releases/2010/10-037.html

NASA held the first student launch event in 2000-01. In response to its growing popularity, NASA expanded it in 2006, creating one division for colleges and universities and another, non-competitive division for middle schools and high schools. The event expanded this year with a new pilot demonstration of a second-level university challenge, held May 21 at NASA's Wallops Flight Facility on Wallops Island, Va.

The Marshall Center's Academic Affairs Office, part of the Office of Human Capital, manages the rocketry challenge. The project is sponsored by NASA's Exploration Systems Mission Directorate, Space Operations Mission Directorate, Science Mission Directorate and the Education Flight Projects Office in NASA’s Office of Education, all at NASA Headquarters in Washington. ATK provided corporate sponsorship. The National Association of Rocketry provided technical review and launch support. Watch archived video of the entire launch event at:

http://www.ustream.tv/channel/nasa-msfc

For more information about the NASA Student Launch Projects, visit:

http://education.msfc.nasa.gov/usli or http://education.msfc.nasa.gov/sli

Storey is a public affairs officer in the Office of Strategic Analysis and Communications.

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Marshall Speakers Toolkit and Learning Launchpad Website Offer New Resources for Reaching Youth

By Ann Yelle

Marshall Space Flight Center Academic Affairs Office and Speakers Bureau volunteers consistently reach out to help students learn about NASA. Now presenters have new materials developed specifically to help middle school and high school students learn what we do at Marshall.

A new Speakers Toolkit, developed by the Office of Strategic Analysis and Communications and the Office of Human Capital, offers a youth-focused overview of Marshall. Designed for middle-school students, an animated PowerPoint presentation takes the viewer through the three areas of work that we are known for at the center:

- Building Better Rockets
- Living and Working in Space
- Understanding Our World and Beyond

The toolkit also provides links to videos and classroom activities that can be integrated into the presentation. Marshall employees can access the toolkit on Comm Corner.

The Marshall Learning Launchpad is a public website where students can find engaging content, games and more. The site also matches the colors and icons from the Speakers Toolkit and organizes the content into the three areas of work.

"These tools provide a quick and easy package for Speakers Bureau volunteers," said Marcia Cobun, community outreach specialist and Speakers Bureau coordinator. "Volunteering for the Speakers Bureau is a very rewarding experience. When you engage students, their enthusiasm can be contagious. Their love of space helps us remember why we do what we do."

Marshall team members interested in volunteering for the Speakers Bureau can sign up on the Speakers Bureau section of the Comm Corner website or contact Marcia Cobun at 544-1715.

Yelle, a Schafer Corp. employee, supports the Office of Strategic Analysis & Communications.

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Marshall Association Announces Call for Scholarship Applications

The Marshall Association is accepting applications for its 2011 scholarships. The association plans to grant two scholarships including a $500 minimum scholarship for a student pursuing a bachelor's degree in a Science, Technology, Engineering and Mathematics, or STEM, field of study and a $500 minimum scholarship for a student pursuing a bachelor's degree in a non-STEM field of study.

Eligible applicants must be the dependent of a 2011 Marshall Association member -- current or retired civil service, or contractor members that have joined the association prior to July 1, 2011. In addition, all applicants must be entering their freshman year of college this fall.

Completed applications should be submitted to Sherry White by 4 p.m. CDT on July 1, 2011. No late applications will be accepted.

Employees can access the scholarship application form using the following link: http://www.nasa.gov/centers/marshall/pdf/555302main_2011_scholarship_app.pdf.

Employees can access additional information about the Marshall Association at

http://inside.msfc.nasa.gov/marshall_association/index.html.

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GLBT Awareness Activity to be Held June 24

A Gay, Lesbian, Bisexual, and Transgendered (GLBT) Awareness activity will be held from 11:30 a.m.-12:30 p.m. June 24, in Building 4200, Room P-110. Guest speaker will be Stephanie Stilson, flow director in the Launch Vehicle Processing Directorate at Kennedy Space Center. She manages the integration and scheduling for the space shuttle orbiters' transition and retirement. Refreshments will be served.

For more information about the MSFC GLBT Professional Collaborative Group, contact Lynn Motley, Marshall Employee Assistance Program coordinator, at 544-7549.

Stephanie Stilson (NASA/KSC)

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Obituaries

James Thomas "Jim" Ralston, 78, of Arab died May 18. He retired from the Marshall Center in 1990 as an aerospace engineer. He is survived by his wife, Dorothy "Dot" Ralston.

James Lloyd Locker, 75, of Fayetteville died May 20. He retired from the Marshall Center in 1970 as an electronics technician. He is survived by his wife, Barbara Locker.

Howard Shirl Smith, 82, of Arab died May 23. He retired from the Marshall Center in 1979 as an electronics technician.

Oliver Lathan Hughes, 86, of Huntsville died May 29. He retired from the Marshall Center in 1974 as a physical science technician. He is survived by his wife, Jean Louise Hughes.

William Albert Wilson, 88, of Tuscaloosa died May 31. He retired from the Marshall Center in 1985 as an experimental manufacturing technician supervisor. He is survived by his wife, Ruth Ballard Wilson.

Mack Vinson, 82, of Decatur died June 1. He retired from the Marshall Center in 1980 as a personnel management specialist. He is survived by his wife, Dorothy Riggs Vinson.

Frank Floyd Baker, 81, of Huntsville died June 6. He retired from the Marshall Center in 1985 as a mathematician. He is survived by his wife, Janet Baker.

Find this article at:

http://www.nasa.gov/centers/marshall/about/star/index.html